Keynote Address: Conference on "Space and the Human Dilemma"

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Our agenda here today is an ambitious one. We are to explore "Space and the Human Dilemma" in the context of the current debate over the relations between science and technology on the one hand, and human values on the other. Considering the controversies of the last decade, the character of these relations is not a friendly one. Science and technology have been, and continue to be, seen by critics as generally hostile to human values. Meanwhile, defenders of science and technology have responded with large claims for their potential benefits to personal and social wellbeing.

These controversies typically generate more heat than light. There is little agreement on the full reach of "science" or "technology," and even less agreement--when we are faced with truly hard choices--on what is meant by the good of humanity. Similarly, the space program, until recently seen by almost everyone--advocates and opponents alike--as exemplary of our technological society, has been the subject of related arguments:

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would resources spent on space exploration be better spent here on earth on human welfare? Should the space program emphasize manned or unmanned exploration? Note, again, the conflict suggested between science, technology, and human values.

The tension between the disciplines of science and the humanities was one of the concerns addressed by the British literary and social critic, C.P. Snow, who wrote of "literary intellectuals at one pole--at the other scientists.... Between the two a gulf of mutual incomprehension."(1) And so it is that many a speech on this subject has been an exhortation to scientists to attend to the concerns of literature, philosophy, and the arts--and for humanists to acquire the scientific and technological literacy necessary to influence modern society in the way it uses the fruits of the scientific revolution.

I would like to open our discussion today somewhat differently. Exhortation you do not need, or you would not be here. Rather, I would like you to journey with me into our past, into the world of our common heritage of humane thought and expression, where we will find that the questions that concern us today--questions that can be simply restated as the relationship of knowledge to human dignity and human destiny--have been asked before. We will look at four great works of Western literature, all written before the twentieth century. Each deals with the search for knowledge, and the relationship of that search to human dignity and moral responsibility. Each work brings to its

subject a special perspective that is as relevant in our day as it was in its own--the perspective of the religious person, the perspective of the cynic, and finally, the perspective of the modern man challenged by the possibilities of science and technology.

Along the way we will also find that man's venture into space is not simply another modern technological venture. Space--the heavens, the stars, the moon, the planets, the celestial spheres, the infinite light shining in an infinite darkness--has been a part of the human search for wisdom since we first grasped the notion that life for us might have a "telos"--a vital purpose--far beyond the passive acquiescence to nature's seasons.

Let us begin with what is probably the most familiar account of the world's beginning. The Old Testament, composed during the first millenium B.C., was the work of many hands, its opening story of creation derived from the creation epics of Mesopotamia. Unlike in the creation myths of the East, the world was in fact <u>created</u>, <u>once</u>, out of a void, instead of brought into being through birth, its continuity a matter of continual rebirth--for where there is birth, there was birth before. Not only does the Judeo-Christian tradition rest on the monotheistic concept of a single, supreme deity, but that deity is also in the first instance a <u>maker</u>, the maker of the physical world:

> And the earth was without form, and void; and the darkness was upon the deep. And the Spirit of God moved upon the face of the waters.[1:2]

His first creation was light, His second, the firmament--the heavens. Only then did He create the land, and the seas, "the grass, the herb yielding seed, and the fruit tree yielding fruit ...whose seed is in itself." And then the sun, the moon, the planets, and the stars in their courses:

> And God said, Let there be lights in the firmament of the heaven to divide the day from the night; and let them be for signs, and for seasons, and for days, and years:
>
> And let them be for lights in the firmament of the heaven to give light upon the earth...
>
> And God made two great lights; the greater light to rule the day, and the lesser light to rule the night: he made the stars also.[1:3-16](2)

The first chapter of Genesis describes the first great Master-work, not only the night, the day, the heavens, the earth--but also "every living creature that moveth," including man and woman, to whom He gave "dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth, and over every creeping thing that creepeth upon the earth."[1:21,26]

The world that God made in the Old Testament was the corporeal world, the terrestrial world as well as the physical world of the heavens. In contrast to the Platonic view in which

the corporeal world is merely a dark shadow of a transcending ideal, or the Eastern view in which it is but the temporary resting place of an eternal spirit--the world God made was and is the real world. Moreover, knowledge consists in knowing this world that was made once, and having been made once, has a true beginning and, so long as it endures, will have a history. Not only does Genesis give us a benign view of the natural world, the first great Masterwork; it accepts the possibility of human knowledge of this world, which man must have to effect his "dominion."

What is at issue between God and Man in the Old testament is not the knowledge of nature--that knowledge which we now call science--but wisdom: the knowledge not of nature, but of good and evil. It was this wisdom that could be had from the tree of life planted in the midst of the Garden of Eden, "the tree of knowledge of good and evil." What offended the God of Genesis in the story of the Fall, was not simply that Adam and Eve were defiant. Here is the wily serpent, tempting Eve:

> ...Ye shall not surely die:
> For God doth know that in the day ye eat thereof, then your eyes shall be opened, and ye shall be as gods, knowing good and evil.[3:4-5]

Eve--and Adam--as we all know, succumbed, and the proud God of Genesis, having discovered their offense, sentences them to toil and sorrow for the rest of their days. Then, as if addressing other deities off-stage, the Lord God declares: "Behold, the man

is become as one of us, to know good and evil."[3:22] Thus, lest man partake of the tree of life itself and live forever, God dispatches him from the garden of Eden. We may know God's creation, we may master the natural world, which is inherently innocent, because all that God has made is, in His eyes, good. But wisdom is reserved to God, for to know good and evil is to know the purpose for which we were created--it is to know the mind of God.

More than five hundred years elapsed between the writing of Genesis and the writing of Job, that incomparable study in the struggle for human dignity in the midst of the most profound adversity and humiliation. Our concept of human dignity acquires a clearer definition in the Book of Job, for it is here that the Old Testament articulates for many the essential dilemma of human existence. How are we to live a good life in an evil world, in a world in which the innocent suffer? The knowledge of good and evil, or divine wisdom, is forbidden to Job, as it was to Adam and Eve. "Where shall wisdom be found?" asks Job. "The depth saith, It is not in me.... God understandeth the way thereof, and he knoweth the place thereof. For he looketh to the ends of the earth, and seeth under the whole heaven."[28: 12-24] Notwithstanding, Job accepts, and not only accepts, but asserts, moral responsibility for his own life, and herein lies his dignity. Bereft of his family, his servants, all his worldly goods, and cast into a painful desolation, the good man Job laments:

> My soul is weary of my life;...I will speak in the bitterness of my soul.

> Is it good unto thee that thou shouldest oppress, that thou shouldest despise the work of thine hands, and shine upon the counsel of the wicked?...
>
> Thou knowest that I am not wicked...
>
> Thine hands have made me and fashioned me together round about; yet thou dost destroy me....
>
> Thou huntest me as a fierce lion:...
>
> Wherefore then has thou brought me forth out of the womb?[10:1-18]

And yet he says:

> As God liveth, who hath taken away my judgment; and the Almighty, who hath vexed my soul;
>
> All the while my breath is in me, and the spirit of God is in my nostrils;
>
> My lips shall not speak wickedness, nor my tongue utter deceit.
>
> ...till I die I will not remove mine integrity from me.
>
> My righteousness I hold fast, and will not let it go: my heart shall not reproach me so long as I live.[27:2-6]

Job's story, by the way, ends happily. All that he had before is restored to him twice over.

Interpreting biblical passages is, of course, perilous business; theologians for two millennia have attempted "true" readings of texts from numerous sources which, in turn, have had varying translations, even if divinely inspired. Of such are the varieties of Judaism and Christianity made. For our purpose

today, however, we can remind ourselves that the nature of human dignity is a problem that has troubled us since antiquity; that human dignity is not threatened by the knowledge of nature in and of itself. Human dignity is imperiled, instead, by the failure to accept moral responsibility for what we know, for what we do, and for what we are.

Let us turn, now, from the somber tones of the Old Testament to a work of satire which also happens to be one of the first recorded stories of space travel. This journey of the imagination was inspired by the widespread folly, hypocrisy, and corruption that flowed beneath the grand surfaces of the Pax Romana during the first and second centuries A.D., when the emperors Hadrian and Marcus Aurelius presided over the synthesis of Greek and Roman art and literature so central to our classical heritage. As a result, the perspective on the problem of knowledge we will encounter is not the religious perspective, but the perspective of the cynic.

Our guide on this early journey into space is the Roman satirist Lucian (A.D.125 to A.D.190). A native of Syria, born to modest means and apparently self-educated, Lucian read and traveled widely, making a career of the perfection of Greek rhetoric. If he had any philosophy, it was the Hellenistic philosophy of the Cynics, who surpassed the Skeptics by pursuing an ideal of nonattachment to the values and conventions of society. Thus Lucian described the early Christians as "poor wretches [who] have convinced themselves that they will be completely

immortal." But he saved some of his sharpest barbs for famous philosophers and historians.

And so it is that Lucian's own "True History" is a satire on the work of Homer, Herodotus, Thucydides, and the lesser historians of antiquity. In the opening to his history Lucian promises that he will outdo that great master Homer,

> who told Alcinous and his court an extremely tall story about bags full of wind, and one-eyed giants, and cannibals and other unpleasant characters, not to speak of many-headed monsters and magic potions that turned human beings into animals.(3)

The device Lucian chose to expose the foibles and foolishness of mankind was a journey into space. The journey begins when Lucian sets sail, with "fifty other young men who felt the same way as I did" from the pilars of Hercules" (modern Gibraltar) "with a brisk wind behind me." Their motive? "Mere curiosity. I just felt I needed a change, and wanted to find out what happened [on] the other side of the Ocean...."

The first leg of their voyage takes them to an island where they discover "some specimens of a very rare type of vine.

> They had good thick trunks growing out of the ground in the normal manner, but apart from that they were women, complete in every detail from the waist upwards.... When we went up to them, they shook us warmly by the hand and said they were delighted to see us.... Then they wanted us to kiss them, and every man who put his lips to theirs got very drunk and started lurching about.

When some of Lucian's crew attempt to pick the fruit of these comely vines they are transformed into vines themselves, and become "literally rooted to the spot, their fingers turning into vine-shoots and their hair into tendrils." Those who have escaped this curious transformation beat a hasty retreat and set sail again. But no sooner do they lose sight of land than--

> ...we were suddenly hit by a typhoon, which whirled the ship round at an appalling speed and lifted it to a height of approximately 1,800,000 feet. While we were up there, a powerful wind caught our sails and bellied them out, so instead of falling back on to the sea we continued to sail through the air for the next seven days.... On the eighth day we sighted what looked like a big island hanging in mid-air, white and round and brilliantly illuminated, so we steered towards it, dropped anchor and disembarked.... far below us we could see a place full of towns and rivers and seas and forests and mountains, which we took to be the Earth.

What happens next is a series of incredible encounters with grotesque and mostly hilarious creatures who entangle Lucian's hapless crew in a string of harrowing adventures. One does not have to read far to suspect that we have met a literary ancestor of Jonathan Swift or Voltaire; or perhaps of Dorothy's dream journey to the Land of Oz, where the great Wizard will remind us that much of what passes for great philosophy and heroism is a matter of paper certificates and and shining medals.

The second book of Lucian's history begins as Lucian and his crew--like Pinocchio, Jiminy Cricket, and kindly Geppetto --extricate themselves from the belly of a huge whale by starting a fire in its insides. But the tone of the history changes in the second book. There we encounter not the panoply of fantastic creatures that people the first book, but a gallery of real rogues and fools and heroes from Lucian's own world. We travel to, among several places, the Island of the Damned, to the Elysian fields, and to the Island of the Blest, where nobody grows old and it never gets dark, and where justice is served: "For your folly in leaving home," they are warned by the reigning magistrate, "and for your idle curiosity, you will be called to account when you die." So they, too, will be expelled from the eternal bliss of Eden.

Lucian would not have us take him too seriously, so let us take our leave of antiquity with a few observations relevant to today's agenda. The first is that our Judeo-Christian heritage includes a world-view in which the act of creation is the most divine of all events, and in which the natural world is <u>the</u> great masterwork. Forever after in the West the physical world of nature would be an object of knowledge and reverence, and the tension between those who explore nature--and those who exploit our knowledge of nature--would be manifest in our culture.

This sublime act of creation included the heavens, the sun, the moon, the planets and the stars in their courses. From pagan as well as Hebrew antiquity we have inherited our first and

most enduring sense of the heavens, for to embark upon that realm is to embark upon a journey where man no longer has dominion, but may acquire an understanding of what is foolish and what is truly good. Two millennia before man set forth into space, travel into space had become a metaphor for a voyage of discovery.

Twelve centuries after Lucian, the Italian poet Dante (1265-1321), standing on the threshold between Medieval and Renaissance Europe, gave us one of the great syntheses of the Christian world-view. His the Divine Comedy is a lengthy allegory of the Christian pilgrim's journey of discovery into Hell, through Purgatory, and finally to Heaven. The work is Medieval in its allegorical character and its fidelity to Catholic doctrine. At the same time, it is an open window to the Renaissance. The Divine Comedy is one of the first great monuments to the humane learning of the Renaissance, in large measure because the central action of the work is the poet's own personal journey of discovery. Nowhere is this more clear than in the first lines of the poem, where Dante tells us that as he entered his own middle age and was faced with the rest of his life, he felt adrift:

> In the midway of this our mortal life,
> I found me in a gloomy wood, astray
> Gone from the path direct.[Inferno, Canto I]

Like the world of Lucian's history, the world of the Divine Comedy will be richly populated; and as in Lucian's history, the people in Dante's story will be real as well as imaginary, allowing him not only to describe the Christian's path in allegory,

but also to give us an extensive commentary on the public life of his own day, a life torn by clerical corruption and the political turmoil to which he himself would one day fall victim.

The important consideration for us today is that the Divine Comedy takes place in the Ptolemaic cosmos that dominated the West's view of the world until Copernicus. At the center was the Earth, and around the earth revolved the heavenly bodies in a spherical motion of such mathematical precision that it made a harmonious music of ineffable sweetness. Hell, meanwhile, is in the bowels of the earth, where the promiscuous, the gluttonous, the avaricious, and the gloomy, alchemists and heretics, frauds and murderers--all occupy special spheres.

Dante's descent into the nine circles of Hell is paralleled by his ascent--now in the company of his beloved Beatrice, a figure drawn from his own city of Florence--through the nine circles of Paradise. And just as each circle of Hell is reserved for the torment of a particular class of sinner, so each circle of Paradise is reserved for those whose lives have displayed a special virtue. And each of these heavenly spheres is the domain of celestial body.

As Dante begins his ascent into Paradise he is so overcome by the wonder of it all that he is left almost speechless, as he tells is with charming modesty:

Words may not tell of that trans-human change;
And therefore let the example serve, though weak,
For those whom grace hath better proof in store.

...

Whenas the wheel which Thou dost ever guide,
Desired Spirit! with its harmony,
Temper'd of Thee and measured, charm'd mine ear,
Then seem'd to me so much of Heaven to blaze
With the sun's flame, that rain or flood ne'er made
A lake so broad. The newness of the sound,
And that great light, inflamed me with desire,
Keener than e'er was felt, to know their cause.
[Paradise, Canto I]

The first circle of Paradise is illuminated by the Moon--

Translucent, solid, firm, and polish'd bright,
Like adamant, which the sun's beam had smit.[Canto II]

Then come Mercury and Venus. The fourth sphere belongs to the Sun,

. . . the great minister
Of nature, that upon the world imprints
The virtue of the Heaven, and doles out
Time for us with his beam, went circling on
Along the spires, where each hour sooner comes;[Canto X]

While the Sun presides over the souls of great religious thinkers, to Mars belong the souls of those who have died fighting for the true faith. To Jupiter belongs the heavenly realm of justice:

Sweet star; what glorious and thick-studded gems
Declared to me our justice on the earth
To be the effluence of that Heaven, which thou,
Thyself a costly jewel, dost inlay.[Canto XVIII]

The seventh sphere, home of hermits and monks, belongs to Saturn, while the eigth sphere is the glorious Heaven of the Fixed Stars. At last Dante and Beatrice pass through the ninth sphere, the Primum Mobile or prime mover, and take their leave of the corporeal world for the empyrean world--the home of the blessed--which is, as Beatrice tells him,

...'Heaven, that is unbodied light;
Light intellectual, replete with love;
Love of true happiness, replete with joy;
Joy, that transcends all sweetness of delight.
Here shalt though look on either mighty host
Of Paradise; and one in that array,
Which in the final judgment thou shalt see.'[Canto XXX]

Admittedly the language of Dante may sound strange to ears grown less and less familiar with a common liturgy; but we should not forget that our notions of a necessary harmony, a unity of design, in the workings of nature, and of an ability to understand the physical world through the universal language of mathematics, originate in the world that Dante has transmitted to us: "The virtue and motion of the sacred orbs," Beatrice tells Dante,

'As mallet by the workman's hand, must needs
By blessed movers be inspired. This Heaven,
Made beauteous by so many luminaries,
From the deep spirit, that moves its circling sphere,
Its image takes and impress as a seal:
And as the soul, that dwells within your dust,
Through members different, yet together form'd,
In different powers resolves itself; e'en so
The intellectual efficacy unfolds
Its goodness multiplied throughout the stars;
On its own unity revolving still.[Paradise, Canto I]

Ascent into the heavens as a metaphor for discovery--carrying with it the symbolic importance of our actual venture into space--has been a compelling theme of our literary and cultural inheritance. But so, also, has been humanity's ambivalence toward knowledge, an ambivalence apparent in the Old Testament. This ambivalence is rooted in the story of Job where, in my view, man is abandoned to an essentially existential condition: although dignity consists in freedom and the acceptance of responsibility, we remain ignorant of our ultimate destiny, and thus the true meaning of good and evil. For Dante, as for many Christians, faith showed the way out of this dilemma. For modern man, the archtypical quest is one of action, and the human dilemma arises whem man seeks immortality through his deeds rather than his faith. This is the lesson of our last text, Goethe's Faust.

The life of the German poet Johann Wolfgang von Goethe (1749-1832) coincided with one of the great "revolutions" of

western history, the dynamic fusion of capital, science, and technological innovation that produced the first Industrial Revolution. The new age of iron and steam power, of factory and mill, produced not only profound social and economic, but also artistic and intellectual changes--changes that still dominate our public life and discourse. Goethe's contemporaries included the founders of socialism--Saint-Simon, Robert Owen, and Francois Fourier--and the first great romantics, Shelley, Byron, and Keats. The generation after Goethe would see the publication of Karl Marx's Communist Manifesto (1848) and Charles Darwin's Origin of the Species (1859). Similar strands formed the warp and woof of this brightly colored fabric: a veneration of individual experience over inherited convention; the assertion that intuition and sentiment, rather than cold calculating reason, are truer guides to the good life; the association of nature with innocence and purity; and the ennoblement of the common man.

Into this milieu, alive with so much creative energy, came Goethe, at once absorbing and recreating one of its greatest figures, the figure of Faust. Goethe's two-part dramatic poem is so full of biblical and classical allusions, and so riddled with internal inconsistencies, as to have given generations of literary critics and graduate students many hours of harmless employment. These allusions and inconsistencies need not occupy us here and now. What matters to us are the two central characters, Faust and Mephistopheles (the devil), and the central tension of the drama.

The original Faust figure dates back at least to the 15th century, when, as legend has it, a brilliant German adventurer made a pact with the devil that gave him magic powers--and assured him eternal damnation. The story appeared in a 16th century biography, and again in the Elizabethan drama by Christopher Marlowe, Doctor Faustus (p.1604). Faust has remained a subject of art and music ever since Goethe's recreation, even into the twentieth century, where he appears in the writings of Thomas Mann and Lawrence Durrell.

Goethe's version of Faust (1808, 1831) is haunted by the spirit of Job as well as the Biblical injunction: "pride goeth before a fall." A learned scholar well acquainted with the mysteries of nature, Faust is nonetheless plagued with discontent:

> I've studied now Philosophy
> And Jurisprudence, Medicine,
> And even, alas! Theology
> All through and through with ardour keen!
> Here now I stand, poor fool, and see
> I'm just as wise as formerly.
> . . . I've nearly ten years through
> Pulled my students by their noses to and fro
> And up and down, across, about,
> And see there's nothing we can know!
> That all but burns my heart right out.
> True, I am more clever than all the vain creatures,

The Doctors and Masters, Writers and Preachers;
No doubts plague me, nor scruples as well.
I'm not afraid of devil or hell.
To offset that, all joy is rent from me.
I do not imagine I could teach what might
Convert and improve humanity.

. . .

So I have turned to magic lore. . .
So that I may perceive whatever holds
The world together in its inmost folds,
See all its seeds, its working power,
And cease word-threshing from this hour.[1.355-385](5)

Into this mood of intellectual frustration steps Mephistopheles, whom we have met before: he is the serpent who appeared to Eve in the Garden, and the satanic temptor of Job. Mephistopheles is the ultimate cynic, and he has already struck a bargain with God: if he, Mephistopheles, can induce Faust to abandon his striving, his search for supreme knowledge--if he can rob him of his idealism--he can have his soul. "Though half aware of his insensate mood," says Mephistopheles of Faust,

He asks of heaven every fairest star
And of the earth each highest zest,
And all things near and all things far
Can not appease his deeply troubled breast.[303-307]

However, The Lord trusts in Faust, his own creation:

Although he serves me now confusedly,
I soon shall lead him forth where all is clear.
The gardener knows, when verdant grows the tree,
That bloom and fruit will deck the coming year.[308-311]

The struggle for the soul of Faust provides the dramatic momentum of the poem. What will be affirmed at the end of this struggle is Goethe's belief that the divine law of the universe is action, a continual, dynamic force that gives life to both man and nature. This is the belief over which Faust and Mephistopheles strike their fateful bargain: "Here to your service I will bind me," promises Mephistopheles,

Commit yourself; you shall in these next days
Behold my arts and with great pleasure too.
What no man yet has seen, I'll give to you.[1656-1674]

In return, Faust promises:

If ever I lay me on a bed of sloth in peace,
That instant let for me existence cease!
If ever with lying flattery you can rule me
So that contented with myself I stay,. . .
If to the moment I shall ever say:
'Ah, linger on, thou art so fair!'
Then may you fetters on me lay,
Then will I perish, then and there![1692-1703]

Before the first part of the poem is over Faust, with Mephistopheles showing the way, will have attempted to corrupt his beloved Gretchen who, for her shame, will have died--but, for her innocence, will have gone to heaven.

It is the second part of Faust, however, written thirty years after the first and much less often read, that speaks directly to the problem of technology and the human dilemma. The moral controversy that is the subject of the first part is over the limits of scientific--cerebral, rational--knowledge. The second part introduces the theme of the relationship of technology to moral responsibility. In the second part we find Faust and Mephistopheles in the palace of the Emperor, where Faust, taken into the Emperor's service, remains restless and discontented; what he yearns for now is achievement, to execute his own great masterwork:

> . . . this earthly sphere
> Affords a place for great deeds ever.
> Astounding things shall happen here,
> I feel the strength for bold endeavour.
>
> . . .
>
> Lordship, possession, are my aim and thought!
> The deed is everything, the glory naught.[10181-10187]

The wily Mephistopheles tempts Faust to seek glory as well, and promises to help him carry out his great plan, which is nothing less than the reclamation of a vast area of land for the benefit of the people. With Mephistopheles's help, Faust will aid the Emperor in his war against his enemies and, in return, Faust will ask the Emperor for title to the land he needs to carry out his project. All this transpires according to their scheming:

Wise lords' menials, bold and daring,
Dug the trenches, dammed the sea,
Ocean's ancient rights not sparing,
Lords, instead of it, to be.
See green meadows far extending,
Garden, woodland, field, and town.

. . .

Sails are gliding far out yonder,
Nightly to safe ports they fare.
To their nests the sea-birds wander,
For the harbour now is there.

. . .

Right and left, though far may be it,
Spreads a thickly-peopled land.[11091-11106]

But this satisfying scene has been purchased at an awful price. Standing in the way of Faust's ambitious reclamation project is the modest cottage and farm of an elderly couple, Philemon and Baucis. They will not sell Faust their home, though he promises to build for them a grand estate. Vexed, he appeals to Mephistopheles to remove them. Not long after, the castle warden, looking out from the watchtower, tells us how:

What a gruesome sight, to fright me,
Threatens from the dark world nigh!
Flashing sparkles I see gushing
Through the lindens' twofold night;
Ever stronger rages, rushing,
Fanned by draughts, a glowing light.

Ah! inside the cabin's flaming,
though moss-grown and damp it stand;

. . .

Ah, those good old folk whom duty
Once made careful of the fire,
Now of smoke become the booty!

. . .

Brilliant tongues of flame are flashing,
Through the leaves and branches lashing;
Withered boughs that flare up, burning,
Swiftly glow, plunge from the tree.

. . .

Down the little chapel crashes,
Burdened under branches' fall.
Winding upward, pointed flashes
Seize upon the tree-tops tall.
To their roots the trunks, ignited,
Hollow, purple-red, glow on.[11306-11335]

Striken with remorse, Faust resolves to abandon his hopeless quest:

Well do I know the sphere of earth and men.
The view beyond is barred to mortal ken;
A fool! who thither turns his blinking eyes
And dreams he'll find his like above the skies.[11441-11444]

Instead, he will persevere in his great project. Though blinded by the spirit of Care, he proclaims:

> Night presses round me, deep and deeper still.
> And yet within me beams a radiant light;
> What I have planned, I hasten to fulfil;
> Only the master's word has weight and might.
> Up from your couches, vassals, every man!
> Bring happily to sight my daring plan.
> Seize shovel, spade! With all your tools lay on!
> The work staked out must with all speed be done.
> Strict order and swift diligence
> Result in fairest recompense.
> To consummate the greatest enterprises
> One spirit for a thousand hands suffices.[11499-11510]

Soon thereafter Faust dies. Mephistopheles thinks the soul of the dead Faust belongs to him, but the heavens suddenly open and hosts of angels descend to claim him. Mephistopheles has lost his wager because Faust never ceased his continual striving and this, we are left to understand, is the true basis of immortality.

The moral ambiguity of this ending (and indeed, of the entire work) has troubled more than one reader. It is true that, in the beginning, when the Lord and Mephistopheles made <u>their</u> wager, the Lord acknowledged "Man errs as long as he doth strive."[316-317] But the fact remains that in both the first and

second parts, Faust's unrelenting lust for power and aggrandizement have caused the destruction of goodness and innocence.

So it is that we come away from Goethe's Faust recognizing that the human dilemma is not a discovery of our twentieth century, and by no means the first fruit of our technological civilization. The dilemma has been with us from the moment of our first quest for knowledge, and has intensified with the increasing power over our world that knowledge has brought us. At first, in the Old Testament, man could have knowledge over nature, but he could not have that higher knowledge of his own destiny which would enable him to understand why the innocent suffer. At the same time, he was given a moral sensibility and through that sensibility he could retain his dignity. The religious point of view exemplified in Dante's Divine Comedy promises immortality through faith, while underscoring the necessity of behaving righteously in an unrighteous world. Finally, with Goethe's Faust, we encounter modern man, striving for immortality through power and achievement. We also encounter again the human dilemma that the quest for immortality may involve compromising the moral self.

Finally: just as we have seen that the essential problem of the relationship between science and technology, and human values is deeply etched into our past, we have also seen our journey into space occupying a special chapter in the long history of man's search for knowledge and its meaning. All that

has been said and written about the political origins of the modern space age may be true, but true only in the sense of a secondary cause. More so than any other technological venture, space travel is associated in the western mind with the ultimate experience of discovery. It is that association, I think, which gives it its vitality and its final purpose.

CITATIONS

(1) Charles Percy Snow, The Two Cultures and the Scientific Revolution (1959).

(2) All Old Testament citations are from the King James Version.

(3) All citations from Lucianus, True History and Lucius, or The Ass, Paul Turner, trans. (Bloomington, IN., 1958).

(4) Citations from Dante Alighieri, The Divine Comedy, Henry F. Cary, trans. (New York, 1937).

(5) Citations from Johann Wolfgang von Goethe, Faust, Parts One and Two, George Madison Priest, trans. Chicago, 1952).